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(54) Telephony Method

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Brief Description of the Figures

The figures show one embodiment of the present invention using an outgoing trunk of a C400 type automatic switch. FIG. 1 shows the part that is added according to the present invention to an outgoing trunk. FIG. 2 shows an information transfer apparatus and a connector that is used in connecting to an outgoing trunk.

Detailed Description of the Invention

With the telephony method according to the present invention, an automatic telephone switch is used to transmit information such as advertisements to a caller subscriber during a non-speaking time that occurs from the time the caller subscriber completes dialing until a callee subscriber answers.

With a numeral storage type automatic telephone switch of the prior art and, in particular, when connecting a call that is destined outside the caller's telephone exchange, connection operations - sending the selection signal and the like – that are required after dialing is completed by a caller subscriber may result in ten seconds or more to elapse before a connection is made to the callee subscriber. The caller subscriber may find this soundless waiting time to be uncomfortable.

It is the object of the present invention to use the non-speaking time that prevails while connecting to or while ringing a callee subscriber to send to the caller subscriber short voice messages such as advertisements either once or repeatedly, thus providing a method for the more efficient use of the non-speaking time and the elimination of discomfort on the part of the caller subscriber.

One embodiment of the present invention is described next in detail with reference to figures.

The figures show an embodiment of the present invention that is adapted for use with an outgoing trunk (OGT) during the time that elapses until connection is made to a callee subscriber. FIG. 1 shows an OGT of the prior art and the circuit that is added to the OGT for the purpose of the present invention. The additional circuit is enclosed by a dotted line. FIG. 2 shows the OGT, an information transfer apparatus (INF) according to the present invention that is connected to the OGT and an information transfer apparatus connector (INFCON) that is used to connect the OGT and the INF.

Their operations are described next. When a caller lifts up the handset and completes dialing and if the callee is a subscriber that is located in an area outside the caller's exchange, a connection marker (CM) uses a publicly known method to select the outgoing trunk (OGT) that is shown in FIG. 1 and activates relay B (battery – B – terminals st – ts – tse – TS – ground) located in the OGT. Relay B readies the operation circuit of relay A and also connects the o_1 pin to

ground through rectifier D_6, thus readying the holding circuit of the cross-bus switch. When the CM activates the trunk link frame (TLF) and the line link frame (LLF), relay A is operated (battery – A – b – e – ⓣ – pin rl_1 – rl – pin rl_6 – ⓡ – pin a_1 – caller – pin b_1 – e – A – rectifier D_2 – b – ground).

Relay B activates the information transfer apparatus (INF) via the information transfer apparatus connector (INFCON) shown in FIG. 2. To explain, the operation of relay B activates relay P (ground – b – de – pin p – P – p_1 – battery) and then relay C (battery – C – p_2 – ground) of INFCON. Relay C then activates relay ON (battery – ON – pin *on* – c – ground) of INF. By means of its operation contact *on*, relay ON activates a magnetic tape circuit (MTR) and a tone identification circuit (TONE) and also activates relay TC (battery – TC – pin tc – c – pin tc – on – ground) in the OGT. By means of its operation contact tc, relay TC divides the speech path of the outgoing trunk OGT as shown in FIG. 1 and connects the caller to the magnetic tape circuit (MTR) that is in the information transfer apparatus (INF) and the callee to the tone identification circuit (TONE). This causes specific advertisements and other voice information that are stored in the MTR to be sent to the caller.

When the connection marker (CM) selects an outgoing sender (OS), and the OGT and the OS are connected via an outgoing sender link (OSL) using publicly known methods, relay S of the OGT is activated (battery – S – pin sc – rl – ground), and lines a_2 and b_2 of the OGT are extended to the outgoing sender (OS), resulting in the selection signal to be sent from OS to the destination exchange. Also, the activation of relay S activates relay M (battery – M – e – s – ground) located in the OGT which readies the metering operation. When the transmission of the selection signal is completed, relay S of the OGT is restored for separating OS, and lines a_2 and b_2 are connected to the TONE circuit in INF. When the line extends to the callee and a ring back tone is returned, the TONE circuit detects and identifies this tone and activates relay TN (battery – TN – ground inside TONE).

When the MTR inside INF completes sending the information once to the caller, relay EN is activated (battery – EN – ground inside MTR) and remains activated. When relays EN and TN operate, relay DC in the OGT is activated (battery – DC – pin dc – c – pin dc – en – tn – ground). Its operation contact dc keeps its own state and also separates the operation circuit of relay P. When relay P is restored, this restores relay C. This is followed by the restoration of relay ON in INF, and INFCON and INF are entirely restored. The restoration of relay C in INFCON restores relay TC in the OGT. Lines a_1 and b_1 are connected to lines a_2 and b_2 via capacitor C, and the caller subscriber hears the ring back tone.

In the afore-described operation, if the callee answers before relay DC in the OGT does not [sic] operate, the polarity of the relay line reverses, causing relay E to operate (ground in the destination exchange – pin a_2 – s – a – s – E – b – s – pin b_2 – battery of destination exchange),

forcing relay DC to operate and separating what is downstream of INF. A speech circuit is created when relay TC is restored.

In the afore-described one embodiment of the present invention, it is possible, if necessary, to add a counter circuit to the information transfer apparatus (INF) so that the MTR is repeatedly activated. Furthermore, depending on the accommodation position of the caller subscriber, it is possible to prevent the connection of the INF to those subscribers who do not require the information. This is accomplished by sending an identification information to the outgoing trunk (OGT) through the connection marker (CM). Also, TONE can be set up to be a voice identification circuit so that the information continues to be sent to the caller even after the callee's line is connected and while the callee's terminal is ringing.

The afore-description applies to the use of the present invention in a C400 type automatic switch. Needless to say, a similar configuration is possible with switches of other types.

As afore-described, the present invention is a practical telephony method that, by adding a relatively simple apparatuses to an outgoing trunk circuit, allows a non-speaking time that exists when connecting to or ringing a callee subscriber to be used to send advertisements and other short voice messages to a caller subscriber without obstructing the speech connection operation in any way.

57. Claims

1. A telephony method wherein a speech path is divided during a non-speaking time that is present while connecting or ringing, an information transfer apparatus that stores voice information such as advertisements and the like in advance is connected to a caller and a tone identification circuit or a voice identification circuit is connected to a callee so that information of a short message duration such as advertisements and the like is automatically sent to the caller either once or repeatedly.

56. References Cited

C400 A4 Line Talkie Trunk Circuit Diagram, Specification 3842, Figure 50585, ver. 3, September 7, 1967, published by Nippon Telegraph and Telephone Public Corporation

FIG. 1

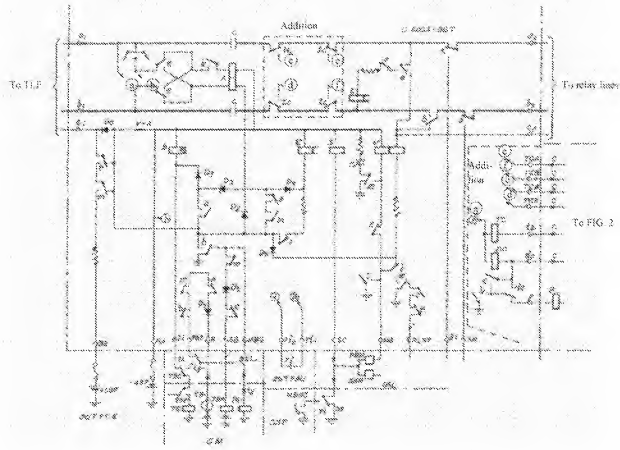

FIG. 2